

## C L A I M S

1. A docking head to be mounted on a graft having an outer diameter so as to couple the graft to a blood vessel, said docking head comprising a hollow truncated cone having a passage that is adapted to correspond the outer diameter of the graft and wherein said hollow truncated cone is provided with a plurality of outwardly pointing and inclined barbs, whereby the docking head act as guiding, anchoring and sealing means in its coupling to the graft.
2. The docking head as claimed in Claim 1, wherein said hollow truncated cone is elastic.
3. The docking head as claimed in Claim 1, wherein said hollow truncated cone has a concaved, convex or straight profile.
4. The docking head as claimed in Claim 1, wherein said barbs are flexible and are inclined opposite a truncated end of said hollow truncated cone.
5. The docking head as claimed in Claim 1, wherein said barbs have a length that ranges from 1 to 4 times the thickness of a blood vessel's wall.
6. The docking head as claimed in Claim 1, wherein said barbs are straight.
7. The docking head as claimed in Claim 1, wherein said barbs are bent so as to establish a concave profile in respect to a radial cross section of said hollow truncated cone.
8. The docking head as claimed in Claim 1, wherein said barbs are bent so as to establish a convex-profile in respect to a radial cross section of said hollow truncated cone,

- 5 9. The docking head as claimed in Claim 1, wherein a portion of said barbs are bent so as to establish a concave profile and another portion are bent so as to establish a convex profile in respect to a radial cross section of said hollow truncated cone.
- 10 10. The docking head as claimed in Claim 1, wherein said hollow truncated cone is provided with a plurality of open slits adapted to allow said truncated cone to curtail its larger diameter.
11. A vascular device for treating a blood vessel with aneurysm comprising:  
a graft having a proximal portion and a distal portion;  
at least two docking heads wherein a first docking head is provided at said proximal portion and at least one second docking head is provided at said distal portion;  
15 whereby the vascular device is coupled to the blood vessel on both sides of the aneurysm by said at least two docking heads that act as guiding, anchoring and sealing means in a suture-less and rapid manner.
- 20 12. The vascular device as claimed in Claim 11, wherein said graft is a tubular graft.
13. The vascular device as claimed in Claim 11, wherein said graft is a bifurcated graft.
- 25 14. The vascular device as claimed in Claim 11, wherein said graft is longer than the aneurysm and at least one of said at least two docking heads is mounted so as to move along said graft and is adapted to be fasten to a suitable positioning on said graft during treatment.

15. The vascular device as claimed in Claim 12, wherein said at least one of said at least two docking heads is coupled to said suitable positioning by a means selected from a group such as fit, glue, sutures, clips, or staples.
- 5 16. The vascular device as claimed in Claim 11, wherein said at least two docking heads have an outer diameter so as to couple the graft to the blood vessel, and wherein said at least two docking heads comprise a hollow truncated cone having a passage that is adapted to correspond an outer diameter of said graft and wherein said truncated cone is provided with a  
10 plurality of outwardly pointing and inclined barbs.
17. The vascular device as claimed in Claim 16, wherein said hollow truncated cone is elastic.
- 15 18. The vascular device as claimed in Claim 16, wherein said hollow truncated cone has a concaved, convex or straight profile adapted to a profile of said blood vessel in positioning of said at least two docking heads on said graft.
- 20 19. The vascular device as claimed in Claim 16, wherein an outer diameter of said hollow truncated cone which is a smaller diameter is substantially smaller than an internal diameter of the blood vessel so as to guide it into the blood vessel.
- 25 20. The vascular device as claimed in Claim 16, wherein a larger diameter of said hollow truncated cone surpasses an inner diameter of the blood vessel in said at least two docking heads positioning in said vessel in about 1 to 10 mm.
- 30 21. The vascular device as claimed in Claim 16, wherein said barbs are flexible and are inclined towards a direction of said graft.

22. The vascular device as claimed in Claim 16, wherein said barbs have a length that ranges from 1 to 4 times the thickness of the blood vessel's wall.
- 5 23. The vascular device as claimed in Claim 16, wherein said barbs are bent so as to establish a concave profile in respect to a radial cross section of said hollow truncated cone.
- 10 24. The vascular device as claimed in Claim 16, wherein said barbs are bent so as to establish a convex profile in respect to a radial cross section of said hollow truncated cone,
- 15 25. The vascular device as claimed in Claim 16, wherein said barbs are bent so as to establish a partial concave and partial convex profile in respect to a radial cross section of said hollow truncated cone.
- 20 26. The vascular device as claimed in Claim 16, wherein said hollow truncated cone is provided with a plurality of open slits adapted to allow said truncated cone to curtail its larger diameter.
27. The vascular device as claimed in Claim 11, wherein said truncated cone is an extension of said tubular graft that is outwardly everted over a guiding end of said at least two docking heads.
- 25 28. The vascular device as claimed in Claim 11, wherein said at least two docking heads as well as said graft are made as changeable separate modules that can be selected according to individual blood vessel anatomy to be prosthetic.
- 30 29. A delivery device adapted to facilitate the insertion of a vascular device for treating a blood vessel with aneurysm that comprises a graft having a proximal portion and a distal portion and at least two docking heads wherein a first docking head is provided at said proximal portion and at least one

second docking head is provided at said distal portion, said delivery device comprising:

a flexible tube having a proximal side and a distal side;

5 a wire passing through said flexible tube, wherein said wire extends beyond said distal side so as to enable its removal from said flexible tube;

a sharp tip provided on said wire wherein said sharp tip is adapted to protrude through said proximal side and wherein said sharp tip can be withdrawn inwardly to within said flexible tube;

10 an inflatable balloon provided in said proximal side;

a tubing extending from said inflatable balloon to said proximal side, wherein liquid can be pushed through said tubing so as to inflate said inflatable balloon up to blood flow stoppage.

15 30. The delivery device as claimed in Claim 29, wherein the at least two docking heads have an outer diameter so as to couple the graft to the blood vessel, and wherein said at least two docking heads comprise a hollow truncated cone having a passage that is adapted to correspond an outer diameter of said graft and wherein said truncated cone is provided with a plurality of  
20 outwardly pointing and inclined barbs.

31. An anastomosis method for treating a blood vessel having an aneurysm edged by healthy portions: a proximal healthy portion and a distal healthy portion, said method comprising:

25 providing a graft having a length and a diameter corresponding the blood vessel to be treated, wherein said graft has a distal end and a proximal end and wherein said graft is provided with at least two docking heads that comprise a hollow truncated cone having a passage that is adapted to correspond an outer diameter of the graft and wherein said  
30 hollow truncated cone is provided with a plurality of outwardly pointing and inclined barbs, wherein a first docking heads is provided in said

proximal end and at least second docking head is provided in said distal end;

providing a delivery tool;

stopping blood flow in the blood vessel;

5 performing an incision and cleaning the aneurysm;

inserting said proximal end to the proximal healthy portion;

slightly pulling backwardly proximal end so as to dock said first docking head in the proximal healthy portion;

inserting said distal end to the distal healthy portion;

10 slightly pulling backwardly distal end so as to dock said at least one second docking head in the distal healthy portion;

restoring the blood flow;

suturing the incision.

15 32. The method as claimed in Claim 31, further comprising:

providing at least one docking head that is adapted to move along said graft;

20 adapting a length of said vascular device to the length of the blood vessel to be treated by moving said at least one docking head along said graft;

fixing said at least one docking head on said graft in a suitable positioning.

25 33. The method as claimed in Claim 31, wherein said delivery tool is a tubular catheter having a sharp tip that is adapted to be concealed, a wire adapted to be removed, and an inflatable balloon at its proximal end, wherein said method further comprising:

puncturing the aneurysm by said sharp tip;

concealing said sharp tip;

30 advancing said tubular catheter to the proximal healthy portion;

inflate said balloon so as to fix said tubular catheter in the proximal healthy portion and stop the blood flow;

removing said wire;  
mounting said graft over said tubular catheter;  
guiding said proximal end to the proximal healthy portion;  
deflating said balloon and removing said tubular catheter through  
5 said graft.

34. The method as claimed in Claim 31, wherein said delivery tool is forceps.

10 35. The method as claimed in Claim 32, wherein said forceps is provided with elongated and curved jaws that can be inserted within said graft and wherein a rounded protrusion is provided at a guiding end of said elongated and curved jaws.

15 36. The method as claimed in Claim 32 wherein said forceps are provided with jaws adapted to be positioned in a gap between said truncated cone and said graft so as to guide said distal end or said proximal end to the vessel healthy portion.